

CLAIMS

What is claimed is:

1 1. A multiple fan monitoring circuit for use with
2 a plurality of fans, wherein each of said plurality of
3 fans operates at a different frequency and generates a
4 tach signal indicative of said fan operation, comprising:

5 a plurality of waveform shaping networks, wherein
6 each of said plurality of waveform shaping networks is
7 coupled to a corresponding one of said plurality of fans
8 and utilized to waveshape a tach signal generated by said
9 corresponding fan; and

10 a frequency processing circuit, coupled to said
11 plurality of waveform shaping networks, that receives
12 said waveshaped tach signals at a fan sense node.

1 2. The multiple fan monitoring circuit as recited
2 in Claim 1, wherein said frequency processing circuit
3 includes:

4 a summing circuit, coupled to said fan sense node,
5 that combines said waveshaped tach signals into a single
6 combined signal; and

7 a frequency discriminator, coupled to said summing
8 circuit, that separates said single combined signal into
9 multiple components, wherein each of said multiple
10 components corresponds to a particular fan in said
11 plurality of fans.

1 3. The multiple fan monitoring circuit as recited
2 in Claim 2, wherein said frequency processing circuit
3 further comprises an analog to digital converter.

1 4. The multiple fan monitoring circuit as recited
2 in Claim 2, wherein said summing circuit includes a
3 operational amplifier (op-amp) configured as a summer.

1 5. The multiple fan monitoring circuit as recited
2 in Claim 1, wherein each of said plurality of waveform
3 shaping circuits includes a resistor and a capacitor.

1 6. The multiple fan monitoring circuit as recited
2 in Claim 2, wherein said frequency discriminator utilizes
3 a fast fourier transform (FFT) process to separate said
4 single combined signal into multiple components.

1 7. The multiple fan monitoring circuit as recited
2 in Claim 1, wherein each of said plurality waveform
3 shaping networks includes a blocking capacitor.

1 8. A method for monitoring a plurality of fans
2 utilizing a single sense node, wherein each of said
3 plurality of fans operates at a different frequency and
4 generates a tach signal indicative of said fan operation,
5 said method comprising:

6 waveshaping each of said tach signals generated by
7 said plurality of fans;

8 combining said waveshaped tach signals at said
9 single sense node into a single combined signal; and

10 separating said single combined signal into multiple
11 components, wherein each of said multiple components
12 corresponds to an associated fan in said plurality of
13 fans.

1 9. The method as recited in Claim 8, wherein said
2 waveshaping each of said tach signals includes utilizing
3 a plurality of waveform shaping networks, wherein each of
4 said plurality of wave form shaping networks includes a
5 resistor and a capacitor.

1 10. The method as recited in Claim 8, further
2 comprising converting said single combined signal into a
3 digital form.

1 11. The method as recited in Claim 8, wherein said
2 combining said waveshaped tach signals includes utilizing
3 a operational amplifier configured as a summer.

1 12. The method as recited in Claim 8, wherein said
2 separating said single combined signal includes
3 performing a fast fourier transform (FFT) operation on
4 said single combined signal.

1 13. The method as recited in Claim 10, wherein said
2 converting said single combined signal includes utilizing
3 an analog to digital converter.

100 Such as P.C.

Fig 1.

1 14. A data processing system, comprising:
2 a processor having at least one fan sense node;
3 a plurality of fans, wherein each of said plurality
4 of fans operates at a different frequency and generates a
5 tach signal indicative of said fan operation; and
6 a multiple fan monitoring circuit, coupled to said
7 plurality of fans, including: *200*
8 a plurality of waveform shaping networks, *23, 240*
9 wherein each of said plurality of waveform shaping
10 networks is coupled to a corresponding one of said
11 plurality of fans and utilized to waveshape a tach
12 signal generated by said corresponding fan; and
13 a frequency processing circuit, coupled to said
14 plurality of waveform shaping networks, that
15 receives said waveshaped tach signals at a fan sense
16 node.

1 15. The data processing system as recited in Claim
2 14, wherein said frequency processing circuit includes:
3 a summing circuit, coupled to said fan sense node,
4 that combines said waveshaped tach signals into a single
5 combined signal; and
6 a frequency discriminator, coupled to said summing
7 circuit, that separates said single combined signal into
8 multiple components, wherein each of said multiple
9 components corresponds to a particular fan in said
10 plurality of fans.

1 16. The data processing system as recited in Claim
2 15, wherein said frequency processing circuit further
3 comprises an analog to digital converter.

1 17. The data processing system as recited in Claim
2 15, wherein said summing circuit includes a operational
3 amplifier (op-amp) configured as a summer.

1 18. The data processing system as recited in Claim
2 14, wherein each of said plurality of waveform shaping
3 circuits includes a resistor and a capacitor.

1 19. The data processing system as recited in Claim
2 15, wherein said frequency discriminator utilizes a fast
3 fourier transform (FFT) process to separate said single
4 combined signal into multiple components.

1 20. The data processing system as recited in Claim
2 14, wherein each of said plurality waveform shaping
3 networks includes a blocking capacitor.